FILED JUL 12, 2013
DOCUMENT NO. 03960-13
FPSC - COMMISSION CLERK

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 130140-EI

GULF POWER

A SOUTHERN COMPANY

TESTIMONY AND EXHIBIT

OF

STEVEN P. HARRIS

GULF POWER COMPANY

Before the Florida Public Service Commission
Prepared Direct Testimony of
Steven P. Harris
Docket No. 130140-EI
In Support of Rate Relief
Date of Filing: July 12, 2013

Q. Please state your name and business address.

A. My name is Steven Harris. My business address is 475 14th Street, Oakland, California, 94612.

Q. By whom are you employed?

A. I am a Vice President with EQECAT, Inc. (EQECAT), an affiliated company of ABS Consulting, both of which are subsidiaries of the ABS Group of Companies. Together these two companies are leading global providers of catastrophic risk management services, including software and consulting, to major insurers, re-insurers, corporations, governments and other financial institutions. In addition, these companies develop and license catastrophic underwriting, pricing, risk management and risk transfer models that are used extensively in the insurance industry. The companies provide the financial, insurance and brokerage communities with a science and technology-based source of independent quantitative risk information.

Q. Please describe your educational background and business experience.

A. I received Bachelors and Masters Degrees in engineering from the University of California at Berkeley. I am a licensed civil engineer in the state of California. Over the past 30 years, I have conducted and

supervised independent risk and financial studies for public utilities, insurance companies and other entities both regulated and unregulated. My areas of expertise include natural hazard risk analysis, operational risk analysis, risk profiling and financial analysis, insurance loss analysis, loss prevention and control, business continuity planning and risk transfer. A significant portion of my consulting experience has involved the performance of multi-hazard risk studies, including earthquake, ice storm and windstorm perils, for electric, water and telephone utility companies, as well as insurance companies.

I have performed or supervised windstorm (tropical storm or hurricane) loss, and reserve analyses for utilities including Gulf Power Company (Gulf or the Company), Tampa Electric Company, Florida Power & Light Company, Progress Energy Florida, and others. Additionally, I have performed loss analyses for earthquake hazard for utilities including the Los Angeles Department of Water and Power, the Sacramento Municipal Utility District, and British Columbia Hydro.

For energy companies that have assets in a wide array of geographic locations, I have performed or supervised multi-peril analyses for all natural hazards, including earthquakes, windstorms and ice storms.

I. PURPOSE AND SUMMARY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the results of EQECAT's 2010 independent analyses of risk of uninsured loss to Gulf transmission and distribution assets. The study includes a Hurricane Loss Analysis and a Reserve Performance Analysis.

Q. Are you sponsoring any exhibits?

A. Yes. Several charts from the EQECAT study for Gulf are attached to my testimony as Exhibit SPH-1, Schedules 1 to 4, and the complete study is attached as Exhibit SPH-2. The information contained in these exhibits is true and correct to the best of my knowledge.

Q. Please briefly describe the studies performed for the Company.

A. EQECAT performed two analyses relative to Gulf's property damage reserve (reserve): the Hurricane Loss Analysis and the Reserve Performance Analysis. The Loss Analysis is a probabilistic storm analysis that uses proprietary software to develop an estimate of the expected annual amount of uninsured hurricane damage to which Gulf is exposed. The Performance Analysis is a dynamic financial simulation analysis that evaluates the performance of the reserve in terms of the expected balance of the reserve and the likelihood of inadequate funds over a five-year period. The Performance Analysis is based on the potential uninsured

damage determined from the Loss Analysis, at a given initial reserve balance and annual accrual level.

Q. Please summarize the results of your analyses.

A. The Loss Analysis concluded that the total expected annual damage to Gulf's system from all hurricanes is estimated to be $8,300,000. The annual reserve obligation (the portion of the expected annual damage that would be charged against the reserve) is estimated to be $6,800,000.

The Reserve Performance Analysis demonstrated that, assuming a $27,000,000 initial reserve balance and an accrual level of $3,500,000, the expected reserve balance at the end of five years is only $11,000,000, and there is a 29 percent probability that the reserve would be at zero or negative, at the end of the five-year simulation time horizon.

II. LOSS ANALYSIS

Q. Please summarize the Loss Analysis.

A. The Loss Analysis determined the expected magnitude of hurricane damage to Gulf's uninsured transmission and distribution (T&D) system. These costs are associated with repair and/or replacement of Gulf's uninsured T&D assets necessary to promptly restore service in a post storm environment.

Q. Please describe the computer software used to perform the Loss Analysis.

A. USWIND™ is a probabilistic catastrophe simulation model designed to estimate damage due to the occurrence of hurricanes. Probabilistic annual damage is computed using the results of over 100,000 random variable storms. Annual damage estimates are developed for assets and aggregated to produce the overall portfolio damage amounts. USWIND's™ climatological models are based on the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) Technical Reports. EQECAT's proprietary computer software model has been evaluated and determined acceptable by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) for projecting hurricane loss costs.

Q. Why are catastrophe simulation models used for hurricane loss projection?

A. Catastrophe simulation modeling is the process of using computer-assisted calculations to estimate the damage that could be sustained due to natural disasters such as hurricane events. Catastrophe simulation modeling combines actuarial science, engineering, meteorology, and computer science to allow loss estimation of infrequent events. The insurance industry and risk managers use catastrophe simulation modeling to assess and manage risks. Catastrophe simulation modeling is the current standard of risk assessment in the insurance industry.

Q. Does USWIND™ take into account historical storm frequency and severity?

A. Yes. The analysis is based on storm frequency and severity distributions developed from the entire 107-year historical record.

Q. Do the storm frequency assumptions include the possibility of having multiple hurricane landfalls within Florida in any given year?

A. Yes. The current version of USWIND™ includes the possibility of having multiple hurricane landfalls within Florida in any given year, including the impact of such landfalls on aggregate losses. So the possibility of having loss experiences like the 2004-2005 hurricane seasons when multiple hurricanes hit Florida is captured in the model. Similarly, the storm frequency assumptions also capture the possibility of having no hurricane landfall in Florida. The use of the full 107 years of historic storm data to develop storm frequencies assures that the model simulates years without storm landfalls as well as years with single and multiple landfalls.

Q. What were the results of the Loss Analysis?

A. I concluded that the total expected annual damage to Gulf's T&D system from all hurricanes is estimated to be $8,300,000. The annual reserve obligation associated with this total expected annual damage is estimated to be $6,800,000. The $1,500,000 difference reflects that some storm restoration expenditures are either capital costs or other O&M costs that are not allowed to be charged against the reserve.

Q. What does this expected annual damage estimate represent?

A. The expected annual damage estimate represents the average annual cost associated with damage to T&D assets, resulting from hurricanes over a long period of time.

Q. Is the Loss Analysis performed for Gulf the same analysis performed for insurance companies to price an insurance premium?

A. Yes. Hurricane catastrophe simulation modeling and analysis would be similar for an insurance company, electric utility or other entity. The expected annual damage is also known as the "pure premium," which, when insurance is available, is the insurance premium level needed to pay just the expected losses. Insurance companies add their expenses and profit margin to the pure premium to develop the total premium charged. If adequate insurance coverage was available and Gulf obtained such insurance, the premiums charged to customers as an expense would include the pure premium cost and this added expense and profit.

III. PERFORMANCE ANALYSIS

Q. Please summarize the Performance Analysis.

A. EQECAT performed a dynamic financial simulation analysis of the impact of the estimated windstorm damage on the Gulf reserve for the specified initial reserve balance and level of annual funding. The starting assumption for the Reserve Performance Analysis was a balance of $27,000,000. This

analysis performed 10,000 simulations of windstorm damage within the Gulf service area, each covering a five-year period, to determine the effect of the charges for damage on the reserve. Monte Carlo simulations were used to generate damage samples consistent with the expected $6,800,000 annual Loss Analysis results chargeable to the reserve. The analysis provides the expected balance of the reserve in each year of the simulation accounting for the annual accrual, investment income, expenses, and damage using a financial model.

Q. What is a Monte Carlo analysis?

A. Monte Carlo analysis is a technique used to model multiple storm seasons and simulate variable storm damage consistent with the results of the Loss Analysis. Because storm seasons and damage are highly variable, 10,000 five-year simulations are performed to estimate the performance of the Reserve with the given balance and accrual levels.

Q. Are the results of the Loss Analysis incorporated in the Performance Analysis?

A. Yes. Both the likelihoods and amounts of uninsured annual damage determined in the Loss Analysis are used to simulate damage in each of the five years in the Reserve Performance Analysis in order to determine the likelihood of the reserve having adequate funds.

Q. Please summarize the results of the Performance Analysis.

A. The Reserve Performance can be viewed in terms of the expected balance

of the reserve and the likelihood of inadequate funds occurring in any year of the five-year period. Based on an initial reserve balance of $27,000,000 and an annual accrual of $3,500,000, the expected balance of the reserve at the end of five years is only $11,000,000 and there is a 29 percent chance of the fund reaching zero or becoming negative.

Q. What did your evaluation show with respect to a $27,000,000 initial reserve balance?

A. It showed that the reserve value of $27,000,000 combined with annual accruals of $3,500,000 is too small to pay for most storm damage. In fact, it is too little to pay for all SSI 1, also referred to as Category 1, or SSI 2, also referred to as Category 2, single storm events.

Exhibit SPH-1, Schedules 1 through 4 show the mean (or average) damage from single hurricane events of the same intensity category SSI 1 through SSI 4 that make landfall within 10 mile intervals along the Gulf Coast in and around Gulf's service area. Also shown are the initial (Year 0) and final (Year 5) balance values of the reserve from the EQECAT Reserve Performance Analysis for comparison with the potential hurricane damage. The reserve analysis shows the reserve balance to decline in each year from its initial value of $27,000,000 until it reaches $11,000,000 at Year 5.

With a reserve balance of $27,000,000, the reserve would be inadequate to cover all average SSI 2 hurricane landfall damage. The damage values from these Schedules are the mean or average of all hurricane events in the

intensity category. The maximum hurricane damage at milepost 840 (near Pensacola) for SSI 1 and SSI 2 events are approximately $90,000,000 and $100,000,000, respectively. A reserve balance of $27,000,000 at Year 0, or $11,000,000 at Year 5, is inadequate to cover either of these worst case SSI 1 and SSI 2 events.

The potential damage from Category 1 through Category 4 storms in the Storm Study at these landfall mile posts show that the projected reserve would not be adequate to cover the average estimated damage associated with the majority of Category 1 through Category 4 storms.

Category 1 storms. A reserve of $11,000,000 would cover an average Category 1 hurricane projected damage at only 11 of the 24 landfall mile posts. A reserve of $27,000,000 would cover an average Category 1 hurricane projected damage at 23 of the 24 landfall mile posts.

Category 2 storms. A reserve of $11,000 000 would cover an average Category 2 hurricane projected damage at only 5 of 23 landfall mile posts. A reserve of $27,000 000 would cover an average Category 2 hurricane projected damage at only 12 of 23 landfall mile posts.

Category 3 storms. A reserve of $11,000,000 would cover an average Category 3 hurricane projected damage at only 4 of 23 landfall mile posts. A reserve of $27,000,000 would cover an average Category 3 hurricane projected damage at only 8 of 23 landfall mile posts.

Category 4 storms. A reserve of $11,000,000 would cover an average Category 4 hurricane projected damage at only 1 of 23 landfall mile posts. A reserve of $27,000,000 would cover an average Category 4 hurricane projected damage at only 4 of 23 landfall mile posts.

Even if Gulf has favorable storm experience over the following five years, the reserve balance would only grow to $51,000,000. This reserve value is within, but less than, the maximum of the Target Range of $48,000,000 to $55,000,000 authorized by the FPSC in the last rate case. More significantly, a $51,000,000 reserve balance is only half of the expected damage from the worst SSI 2 storm. The effect of the Commission's 2012 order to increase the property damage reserve target was helpful, and if Gulf continues to have favorable storm experience, it will allow continued accumulations to the reserve, therefore increasing the amounts and numbers of possible storms that the reserve can fund. The reserve will not, however, be able to fund all SSI 1 or SSI 2 storms without higher accruals and a higher Target Range for the reserve than currently authorized.

Were the reserve to be adequately funded for SSI 1 and SSI 2 storms, it would still be far below the levels of damage that might be expected from SSI 3 and SSI 4 storms. Average damage from these events as shown in Schedules 3 and 4 can be in excess of $100,000,000 to $200,000,000 with the largest damage being much greater than these average values.

Q. Please describe the annual accrual level tested in the study.

A. The analysis considered only the $3,500,000 accrual level.

Q. Please summarize the results of your analyses.

A. The Loss Analysis concluded that the total expected annual damage to Gulf's system from all hurricanes is estimated to be $8,300,000 in 2009 dollars. The corresponding annual reserve obligation is estimated to be $6,800,000.

The Reserve Performance Analysis demonstrated that, assuming a $27,000,000 initial reserve balance and an accrual level of $3,500,000, the expected reserve balance at the end of five years is only $11,000,000, and there is a 29 percent probability that the reserve would be at zero or negative, at the end of the five-year simulation time horizon.

The $27,000,000 reserve and combined annual accruals of $3,500,000 are too small to pay for most storm damage. It would not even cover all the average SSI and SS2 single storm events, and it would only cover a small number of the average SS3 and SS 4 events.

Q. Does this conclude your direct testimony?

A. Yes.

AFFIDAVIT

STATE OF CALIFORNIA)
)
COUNTY OF ALAMEDA)

Docket No. 130140-EI

Before me the undersigned authority, personally appeared Steven P. Harris, who being first duly sworn, deposes, and says that he is the Vice President of EQECAT, Inc., a Delaware corporation, and that the foregoing is true and correct to the best of his knowledge, information, and belief.

The signed original affidavit is attached to the original testimony on file with the FPSC.

s/ Steven P. Harris
Steven P. Harris
Vice President

Sworn to and subscribed before me this 8th day of July, 2013.

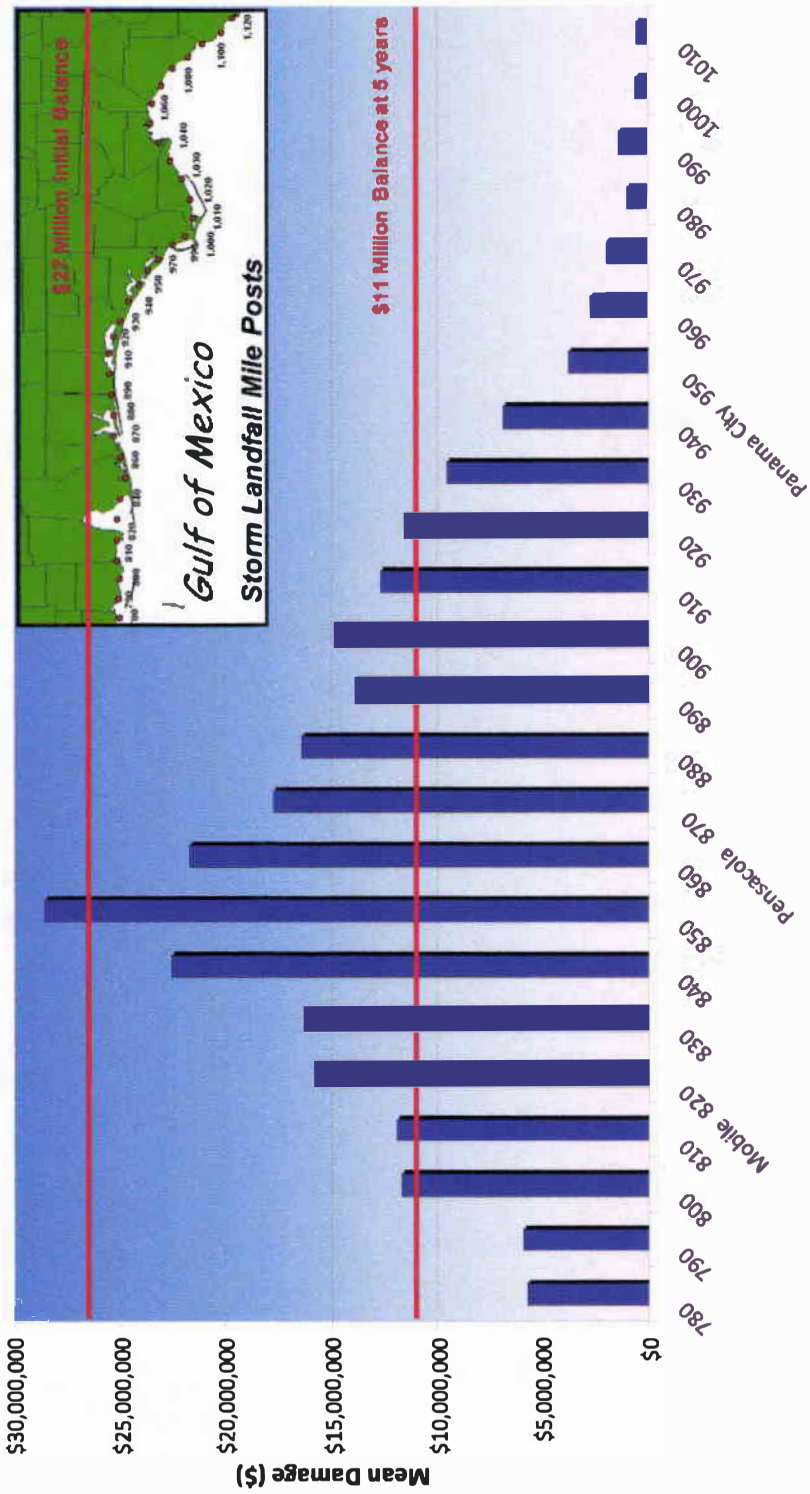
Notary Public, State of California

Commission No. 2025847

My Commission Expires 06/20/2017

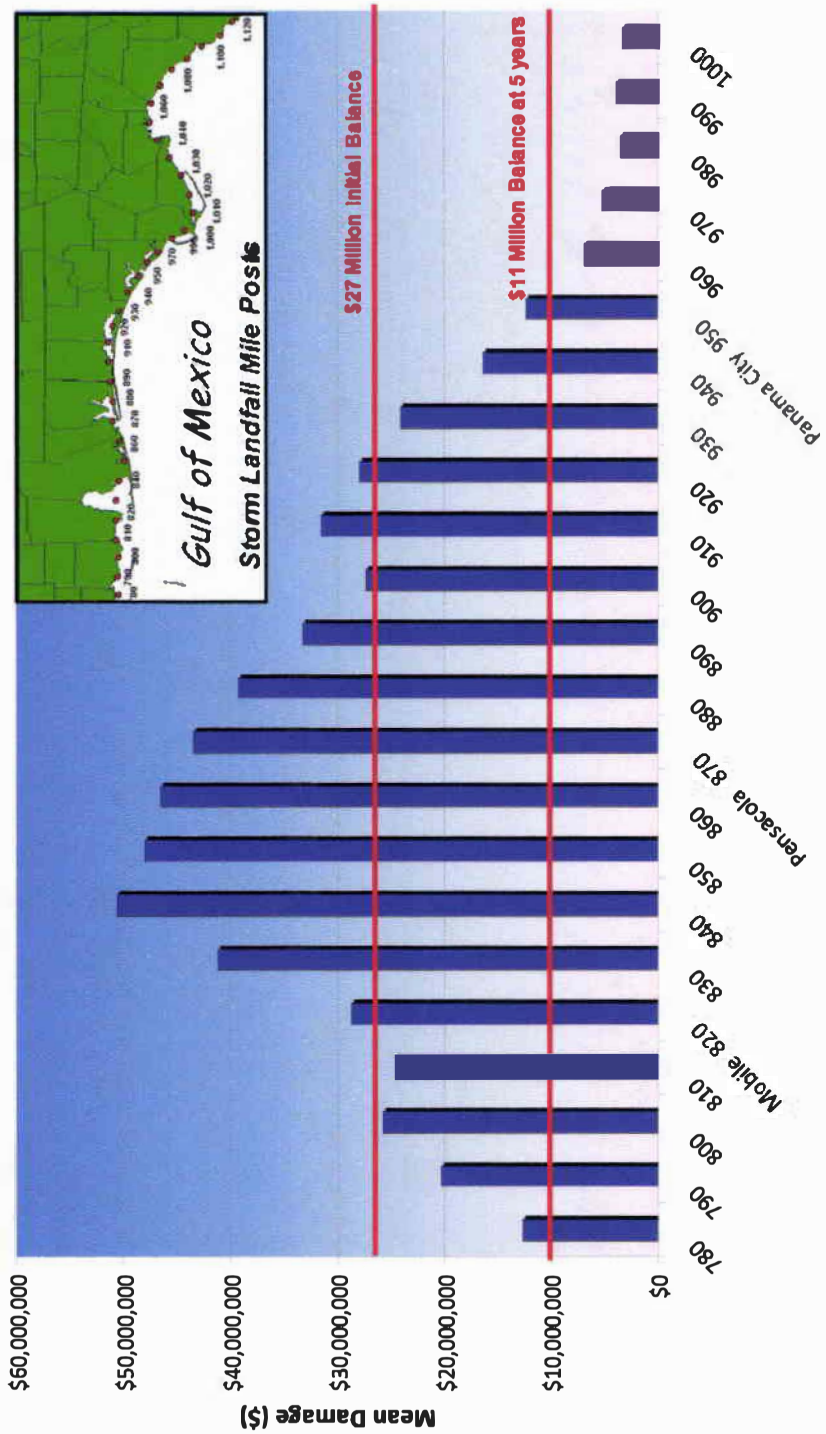
JEREMY DANG
NOTARY PUBLIC - CALIFORNIA
COMMISSION # 2025847
ALAMEDA COUNTY
My Comm. Exp. June 20, 2017

Florida Public Service Commission
Docket No. 130140-EI
GULF POWER COMPANY
Witness: Steven P. Harris
Exhibit No. _____ (SPH-1)
Schedule 1
Page 1 of 1

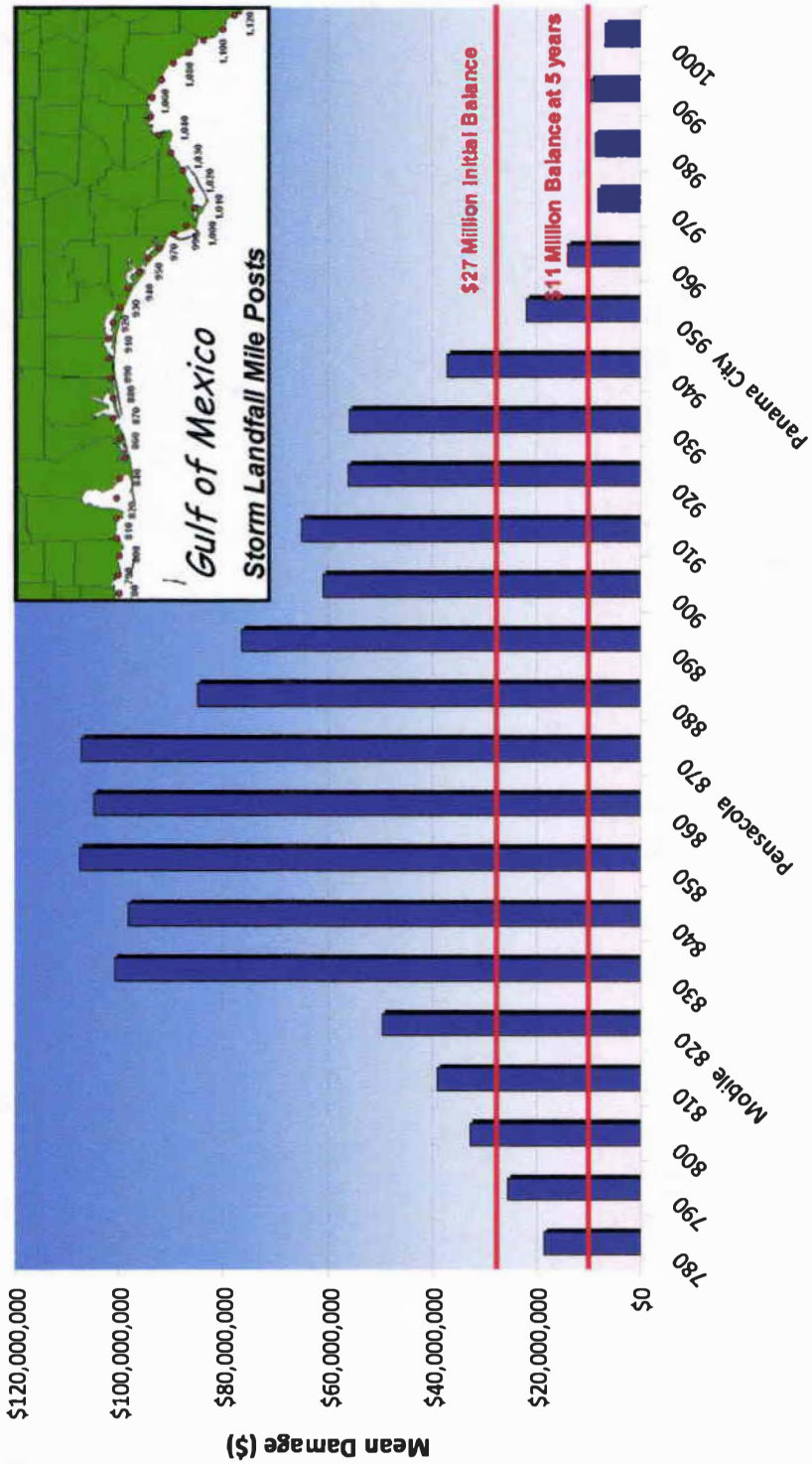


Schedule 1: Protection afforded by an initial balance of $27,000,000 and annual accrual of $3,500,000 against potential average transmission & distribution damage from single SSI1 landfalls at mile posts.

Florida Public Service Commission
Docket No. 130140-EI
GULF POWER COMPANY
Witness: Steven P. Harris
Exhibit No. _____ (SPH-1)
Schedule 2
Page 1 of 1

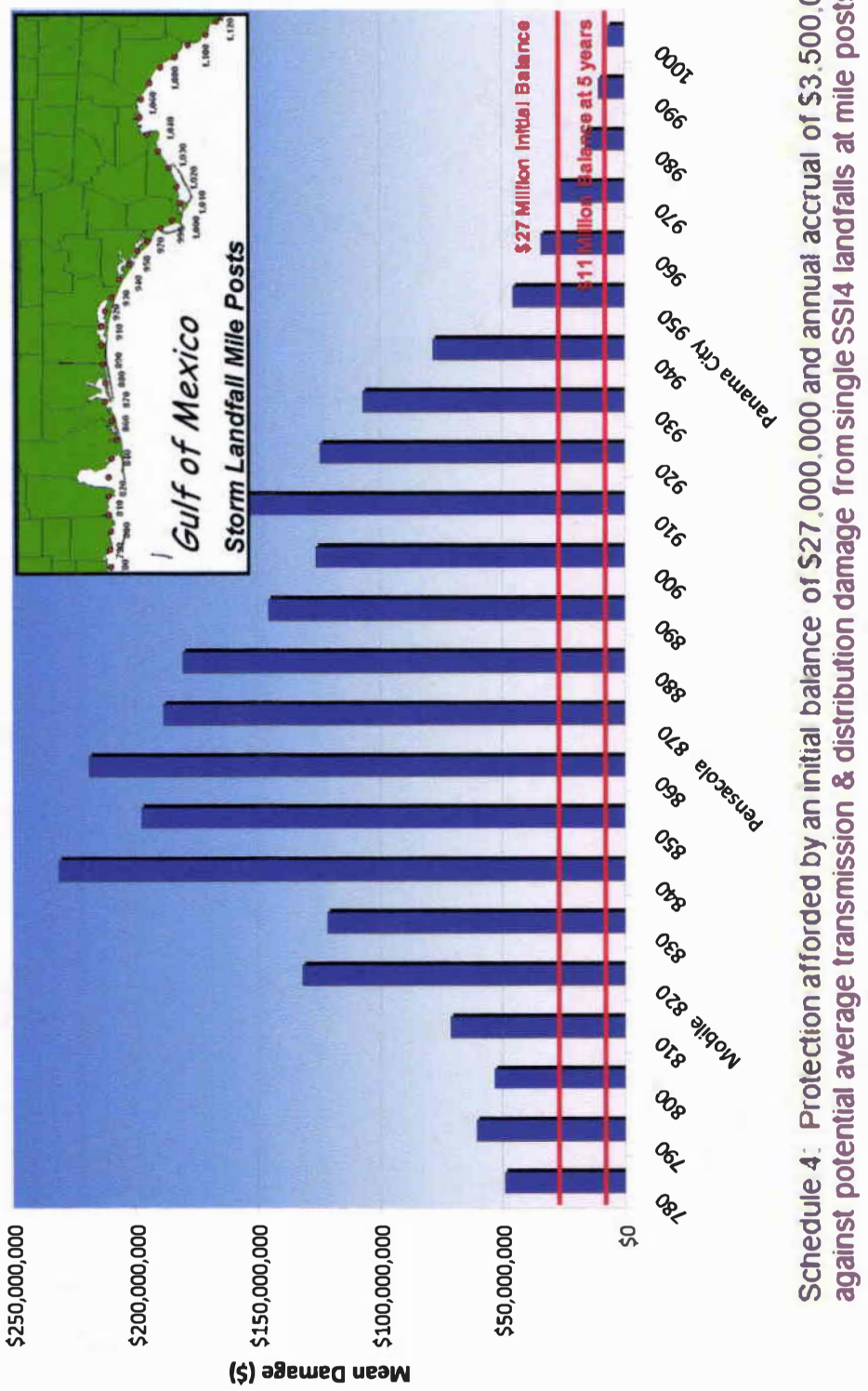


Schedule 2: Protection afforded by an initial balance of $27,000,000 and annual accrual of $3,500,000 against potential average transmission & distribution damage from single SSI2 landfalls at mile posts.



Schedule 3: Protection afforded by an initial balance of $27,000,000 and annual accrual of $3,500,000 against potential average transmission & distribution damage from single SSI3 landfalls at mile posts.

Florida Public Service Commission
Docket No. 130140-EI
GULF POWER COMPANY
Witness: Steven P. Harris
Exhibit No. _____ (SPH-1)
Schedule 4
Page 1 of 1



Schedule 4: Protection afforded by an initial balance of $27,000,000 and annual accrual of $3,500,000 against potential average transmission & distribution damage from single SSI4 landfalls at mile posts.

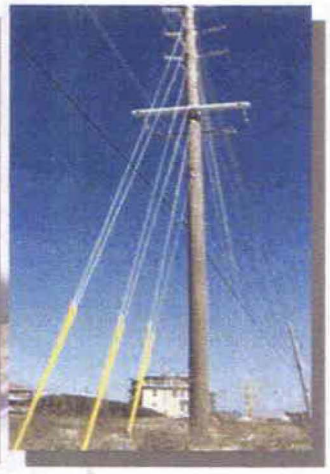
See Attached:

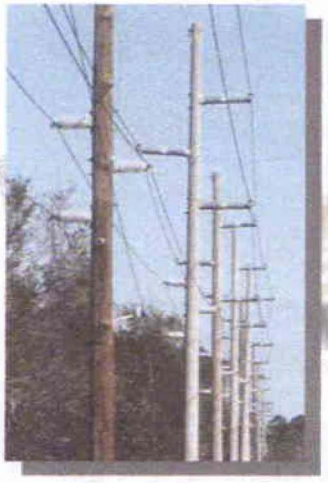
Gulf Power Company
Transmission and Distribution Hurricane Loss and Reserve Performance Analyses

EQECAT
An ABS Group Company

Gulf Power Company

Transmission and Distribution Hurricane Loss and Reserve Performance Analyses





January
2011

GULF POWER
A SOUTHERN COMPANY

Table of Contents

Tables

Figures

DISCLAIMER

THE RECIPIENT OF THIS "RISK PROFILE MEMORANDUM" RECOGNIZES THE INHERENT RISKS THAT ARE ATTENDANT WITH THE RISK ANALYSIS WHICH IS THE SUBJECT OF THIS MEMORANDUM. IN PERFORMING ITS PROFESSIONAL SERVICES, EQECAT HAS PERFORMED IN A WORKMANLIKE MANNER CONSISTENT WITH INDUSTRY STANDARDS.

EQECAT BELIEVES THE DATA AND METHODOLOGIES DESCRIBED IN THE MEMORANDUM TO BE ACCURATE; HOWEVER, THE DATA AND METHODOLOGY DESCRIBED HEREIN, AND THE ANALYSES AND SERVICES PROVIDED HEREIN, ARE PROVIDED "AS IS" WITHOUT ANY WARRANTY OR GUARANTY OF ANY KIND. NEITHER EQECAT NOR ANY OF ITS OFFICERS, DIRECTORS, AGENTS, SUBSIDIARIES OR AFFILIATES GUARANTEES OR WARRANTS THE CORRECTNESS, COMPLETENESS, CURRENTNESS, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE ANALYSIS PROVIDED HEREUNDER. BY ACCEPTING THIS MEMORANDUM, THE RECIPIENT RECOGNIZES THAT METEOROLOGICAL, TOPOGRAPHICAL, ENVIROMENTAL, AND STRUCTURAL CONDITIONS CAN VARY FROM THOSE ENCOUNTERED WHEN AND WHERE EQECAT HAS OBTAINED ITS DATA, AND THAT THE LIMITED NATURE OF THE DATA NECESSARILY CAUSES A LEVEL OF UNCERTAINTY. CONSEQUENTLY, ANY SOFTWARE USED IN CONNECTION WITH THE PERFORMANCE OF SERVICES MAY NOT INCLUDE DATA PERTAINING TO THE MOST RECENT NATURAL CATASTROPHES.

A SIGNIFICANT AMOUNT OF UNCERTAINTY EXISTS IN KEY ANALYSIS PARAMETERS THAT CAN ONLY BE ESTIMATED. PARTICULARLY, SUCH UNCERTAINTIES EXIST IN, BUT ARE NOT LIMITED TO: HURRICANE SEVERITY AND LOCATIONS; ASSET VULNERABILITIES, REPLACEMENT COSTS, AND OTHER COMPUTATIONAL PARAMETERS, ANY OF WHICH ALONE CAN CAUSE ESTIMATED LOSSES TO BE SIGNIFICANTLY DIFFERENT THAN LOSSES SUSTAINED IN SPECIFIC EVENTS.

Executive Summary

Gulf Power (Gulf) transmission and distribution (T & D) systems are exposed to and in the past have sustained damage from hurricanes. The exposure of these assets to hurricane damage is described and potential losses are quantified. Loss analyses were performed by EQECAT, using an advanced computer model simulation program WORLDCATenterprise USWIND™.

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Factors considered in the analysis include the location of Gulf's T & D assets, the probability of hurricanes of different intensities and landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

The frequencies and computed damage for all simulated hurricanes are combined to calculate the expected annual loss and the annual aggregate exceedance relations. The expected annual damage represents the average of all storm years over a long period of time. There is a 10% probability that damage to T&D assets from all hurricanes in one year could exceed $22 million, and a 1% probability that damage could exceed $140 million.

An analysis was also performed to simulate the performance of Gulf's reserve fund over a five year prospective period. This probabilistic analysis is based on the losses and frequencies of occurrence of hurricanes, and the current level of annual accruals to the reserve. This anaysis shows the reserve fund balance is expected to decline from the current $27 million to $11 million at the end of five years. There is a 29% probability that the reserve could have inadequate funds to cover hurricane damage over the five year simulation period.

A summary of the analyses performed by EQECAT of Gulf's hurricane loss exposure and reserve performance are provided in the risk profile in Table E-1 below.

This report is intended to be used solely by Gulf and the Florida Public Service Commission for estimation of potential future Gulf losses to the reserve and the estimation of the performance of the reserve fund.

Table E-1

Gulf Power Company Transmission and Distribution Risk Profile

OWNER	**Gulf Power Company**	
ASSETS	Transmission and Distribution (T & D) System consisting of: Transmission towers, and conductors; Distribution poles, transformers, conductors, lighting and other miscellaneous assets	
LOCATION	All T & D assets located within State of Florida	
ASSET VALUE	Normal replacement value is approximately $ 2.2 billion, of which approximately 21% is transmission and 79% is distribution	
LOSS PERIL	Hurricane Windstorm (SSI 1 to 5)	
EXPECTED ANNUAL DAMAGE	$8.3 million	
10% AGGREGATE DAMAGE EXCEEDANCE VALUE	$22 million (one year)	
1% AGGREGATE DAMAGE EXCEEDANCE VALUE	$140 million (one year)	
	RESERVE PERFORMANCE	
Reserve Fund Initial Balance	**Expected Fund Balance at 5 years**	**Probability of negative balances within 5 years**
$27 million	$11 million	29%

1. Hurricane Loss Analysis

Gulf Power (Gulf) transmission and distribution (T & D) systems are exposed to and in the past have sustained damage from hurricanes. The exposure of these assets to hurricane damage is described and potential losses are quantified. Loss analyses were performed by EQECAT, using an advanced computer model simulation program WORLDCATenterprise USWIND ™ developed by EQECAT, an ABS Group Company. All results which are presented here have been calculated using USWIND, and Gulf provided T & D asset portfolio data.

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Probabilistic analyses identify the probability of damage exceeding a specific dollar amount. WORLDCATenterprise USWIND™ is a probabilistic model designed to estimate damage and losses due to the occurrence of hurricanes. EQECAT proprietary computer software USWIND is one of only four models evaluated and determined acceptable by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) for projecting hurricane loss costs and approved for use in insurance rating (Reference 1).

Probabilistic Annual Damage & Loss is computed using the results of thousands of random variable hurricanes. Annual damage and loss estimates are developed for each individual site and aggregated to overall portfolio damage and loss amounts. Damage is defined as the Operations and Maintenance (O&M) portion of the cost, exclusive of capital and nominal labor, associated with repair and/or replacement of T & D assets necessary to promptly restore service in a post hurricane environment. This cost is typically larger than the costs associated with scheduled repair and replacement programs.

Factors considered in the analysis include locations of Gulf's overhead T & D assets, the probability of hurricanes of different intensities and/or landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

Transmission and Distribution asset data are provided in the Tables 1-1 and 1-2 below. Distribution asset values are shown in Figure 1-1.

Table 1-1

Overhead Distribution Asset Replacement Values by County

County	Replacement Value ($1,000)
Escambia	410,976
Bay	221,048
Okaloosa	206,440
Santa Rosa	188,933
Washington	45,271
Walton	39,078
Holmes	14,624
Jackson	9,136
Total	**1,135,506**

Table 1-2

Overhead Transmission Asset Replacement Value

	Replacement Value ($1,000)
Total	**463,579**

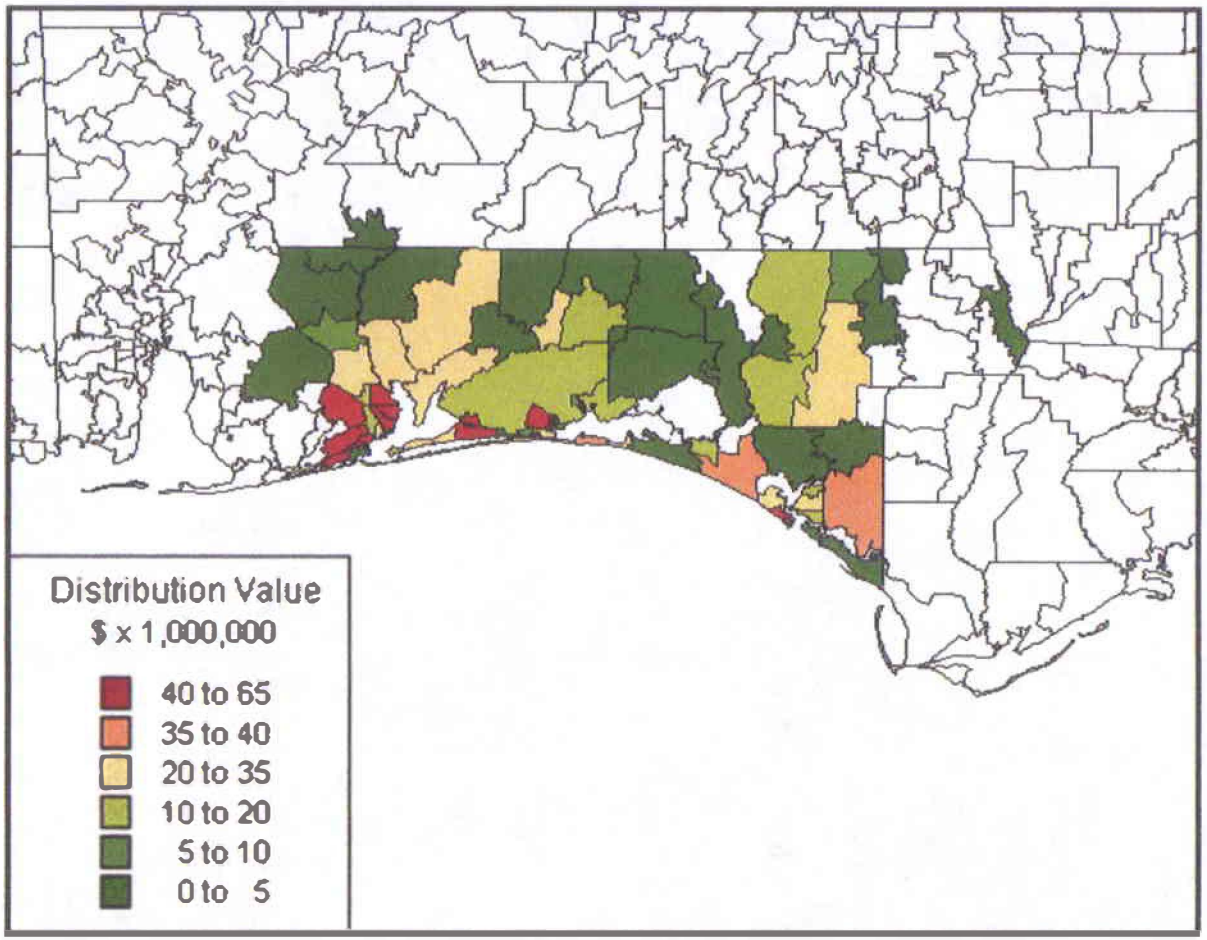


Figure 1-1: Overhead Distribution Asset Values by Zip Code

Transmission and Distribution Asset Vulnerabilities

The Gulf Power loss history from the 2004 Hurricane Ivan, 2005 Hurricane Dennis and Katrina were considered in the calibration of the hurricane loss model. These hurricanes provide data on recent hurricane recovery costs from moderate intensity events. The 2004-05 hurricane loss experience includes the effects of many factors including the post hurricane costs of labor, mutual aid and other factors associated with the hurricane restoration process utilized by Gulf Power. The 2004-05 loss history is believed to be most reflective of the current Gulf hurricane restoration practices and cost experience.

Loss Estimation Methodology

The basic components of the hurricane risk analysis include:

- **Assets at risk:** define and locate
- **Hurricane hazard**: apply probabilistic hurricane model for the region
- **Asset vulnerabilities:** severity (wind speed) versus damage
- **Portfolio Analysis:** probabilistic analysis -damage/ loss

2. Hurricane Hazard

Hurricane Exposure

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Probabilistic analyses identify the probability of damage exceeding a specific dollar amount. WORLDCATenterprise USWIND™ is a probabilistic model designed to estimate damage and losses due to the occurrence of hurricanes. EQECAT, Inc. proprietary computer software USWIND is one of only four models evaluated and determined acceptable by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) for projecting hurricane loss costs and approved for use in insurance rating.

The historical annual frequency of hurricanes has varied significantly over time. There are many causes for the temporal variability in hurricane formation. While stochastic variability is a significant factor, many scientists believe that the formation of hurricanes is also related to climate variability.

One of the primary climate cycles having a significant correlation with Hurricane activity is the Atlantic Multidecadal Oscillation (AMO). It has been suggested that the formation of hurricanes in the Atlantic Ocean off the coast of Africa is related to the amount of rainfall in the Western African Sahel region. Years in which rainfall is heavy have been associated with the formation of a greater number of hurricanes. The AMO cycle consists of a warm phase, during which the tropical and sub-tropical North Atlantic basins have warmer than average temperatures at the surface and in the upper portion relevant to hurricane activity, and a cool phase, during which these regions of the ocean have cooler than average temperatures. In the period 1900 through 2005, the AMO has gone through the following phases:

1900 through 1925	Cool	(Decreased Hurricane Activity)
1926 through 1969	Warm	(Increased Hurricane Activity)
1970 through 1994	Cool	(Decreased Hurricane Activity)
1995 through 2010	Warm	(Increased Hurricane Activity)

These AMO phases are illustrated by the plot of Sea Surface Temperature (SST) Anomalies (deviation from the mean) in the Atlantic Basin over the past 150 years in Figure 2-1.

The National Oceanic and Atmospheric Administration (NOAA) believes that we entered a warm phase of AMO around 1995 which can be expected to continue for at least several years; historically, each phase of AMO has lasted approximately 25 to 40 years.

Probabilistic Annual Damage & Loss is computed using the results of thousands of random variable hurricanes considering the long term 100 year hurricane hazard. Annual damage estimates are developed for each individual site and aggregated to overall portfolio damage amounts. Damage is defined as the total cost including the operations and maintenance (O&M) and capital components associated with repair and/or replacement of T & D assets necessary to promptly restore service in a post hurricane environment. This cost is typically larger than the costs associated with scheduled repair and replacement programs.

Primary factors considered in the analysis include the location of Gulf Power Company's overhead T & D assets, the probability of hurricanes of different intensities and/or landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

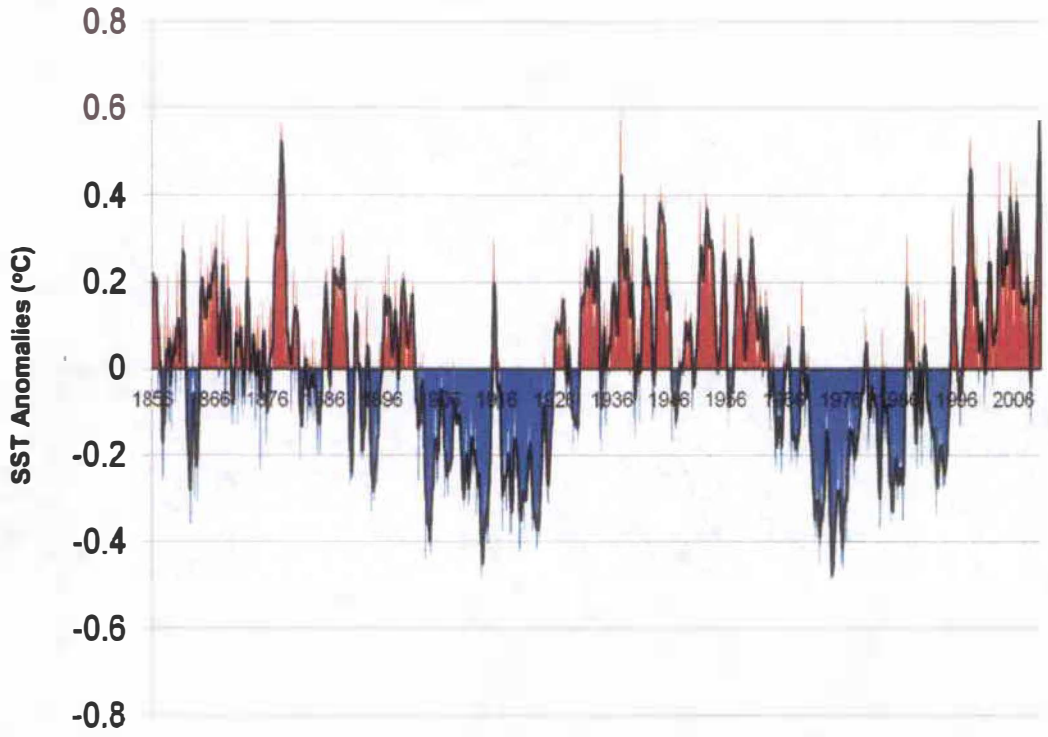


Figure 2-1: Atlantic Multidecadal Oscillation in Sea Surface Temperatures 1856-2010

3. Hurricane Landfall Analyses for SSI Ranges

In order to provide further insight into Gulf's risk profile, the full set of stochastic hurricane events were analyzed by landfall for four storm intensities, SSI 1 through 4. The landfall locations are at mile posts 780 through 1010. Figure 3-1 illustrates the landfall locations. These mile posts extend east from Pascagoula, MS to Apalachicola, FL at approximately 10 mile intervals.

The full set of stochastic storms within each SSI category was analyzed on Gulf's T&D portfolio. For each milepost and SSI category, the frequency-weighted average damage was computed from all stochastic storms making landfall within 10 nautical miles of a given milepost and within that SSI category. Figures 3-2 through 3-5 provide these results graphically.

Figure 3-1: Storm Landfall Mile Posts

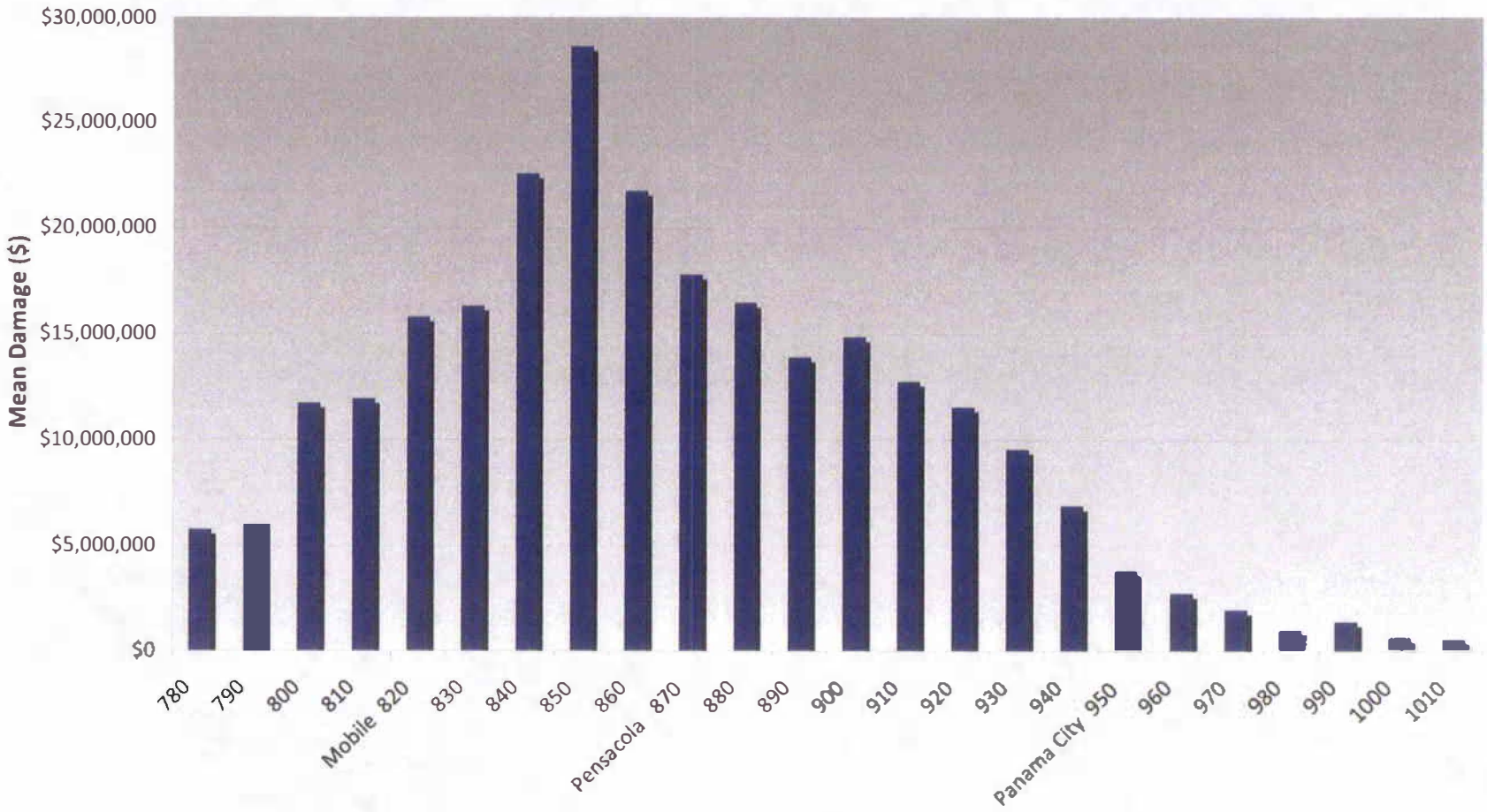


Figure 3-2: Frequency Weighted Average Transmission & Distribution Damage from SSI 1 Landfalls

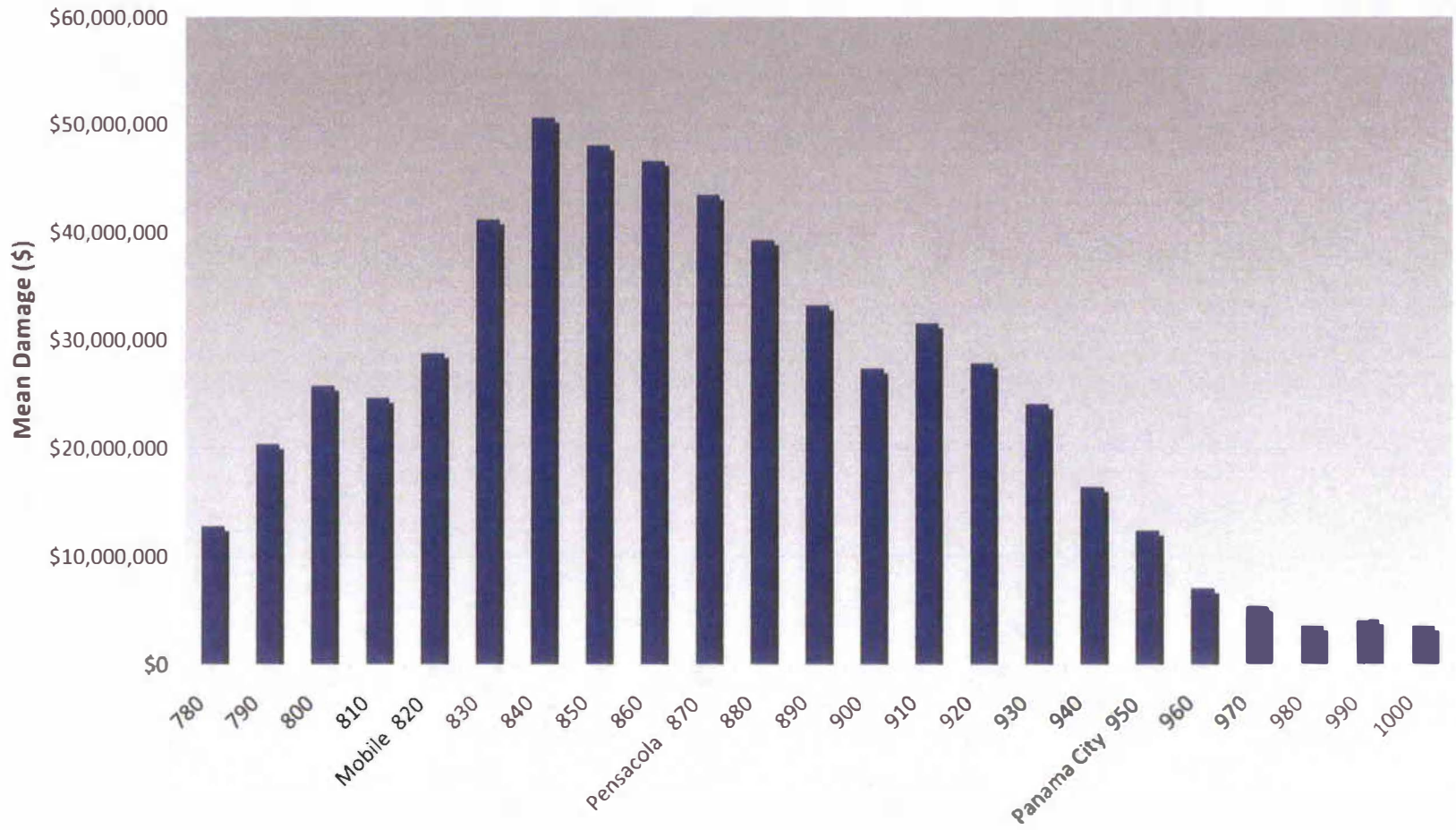


Figure 3-3: Frequency Weighted Average Transmission & Distribution Damage from SSI 2 Landfalls

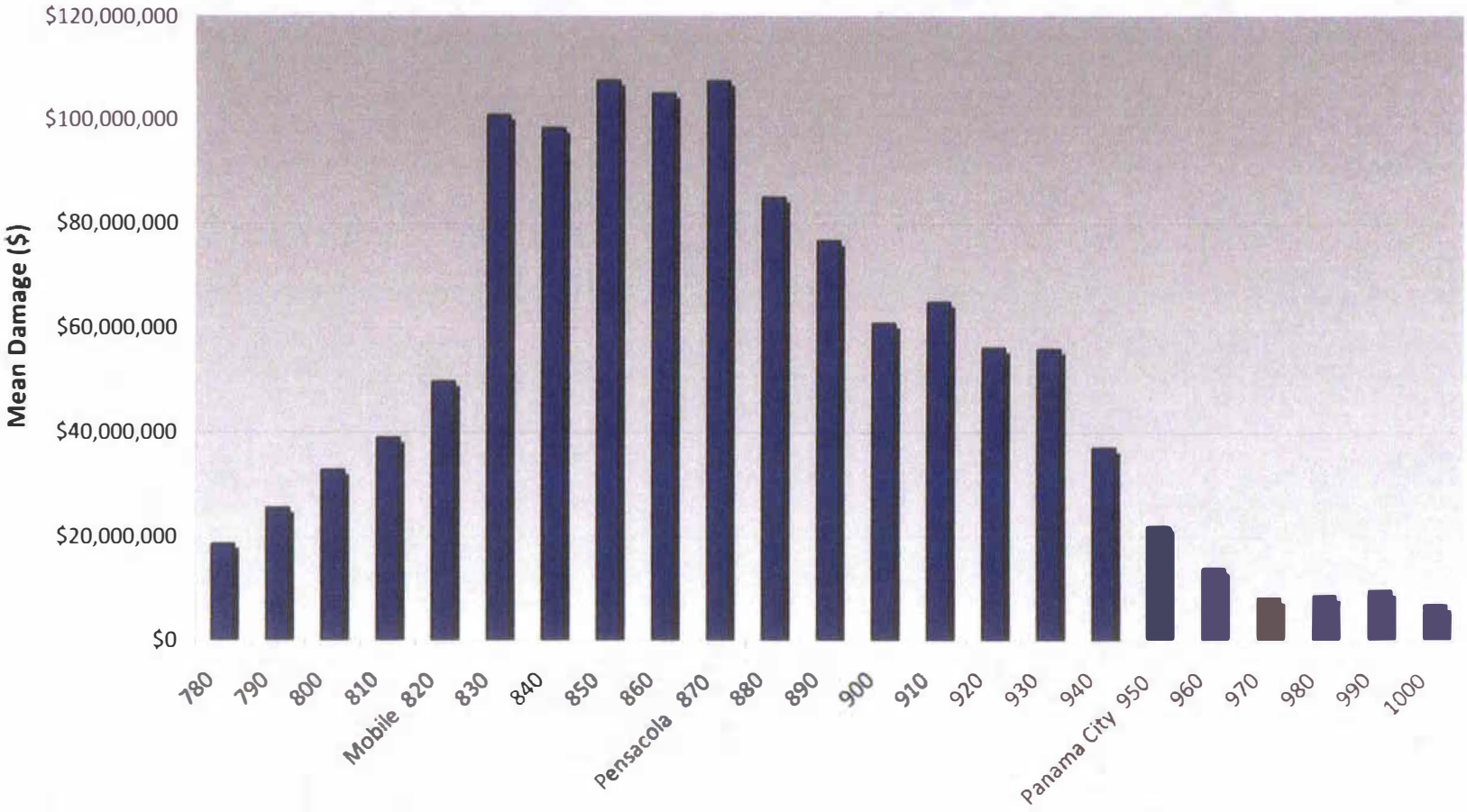


Figure 3-4: Frequency Weighted Average Transmission & Distribution Damage from SSI 3 Landfalls

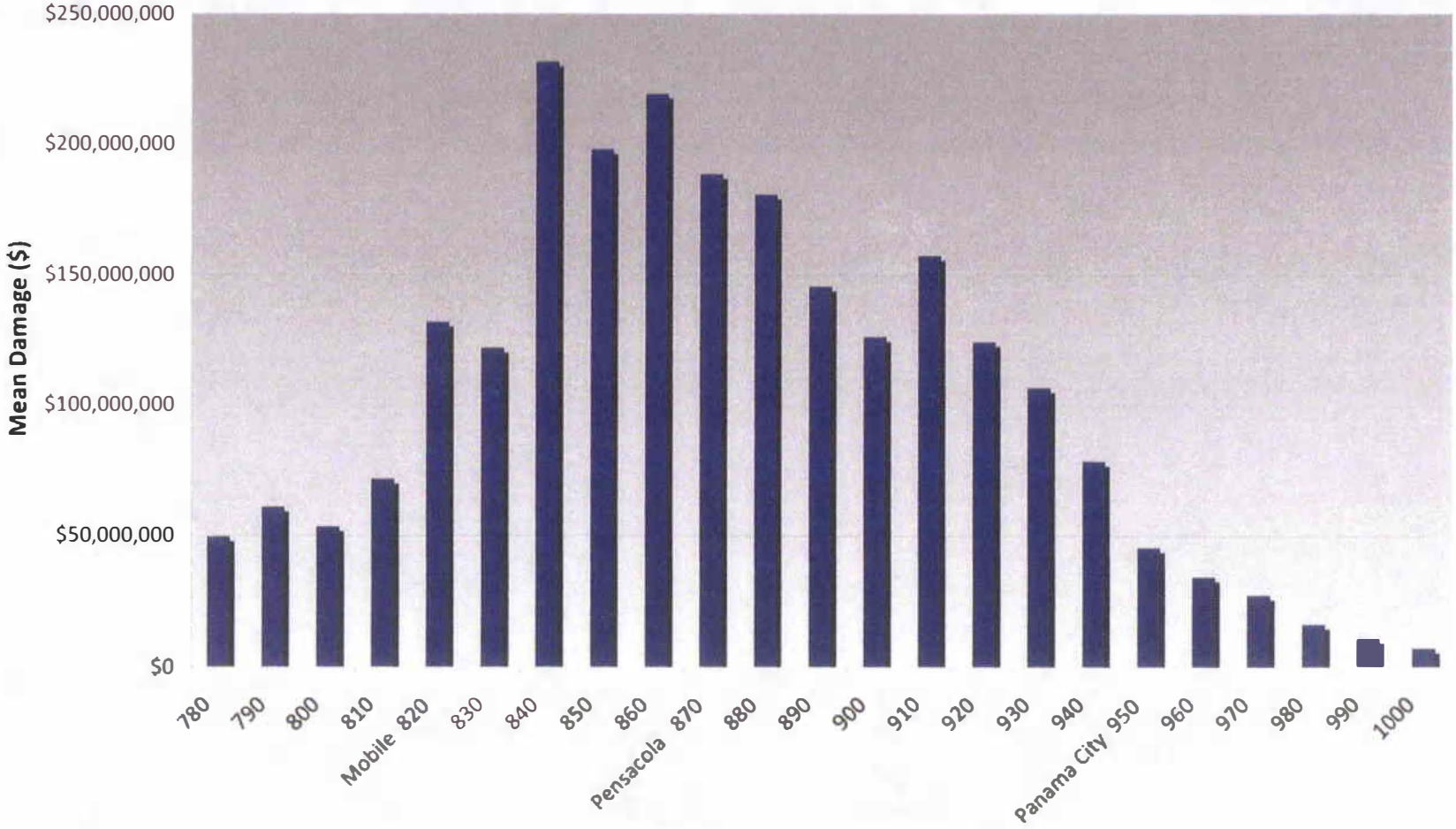


Figure 3-5: Frequency Weighted Average Transmission & Distribution Damage from SSI 4 Landfalls

4. Hurricane Loss Analysis Results

Aggregate Damage Exceedance and Expected Annual Damage

A probabilistic database of losses is developed using the hurricane hazard, assets at risk and their vulnerabilities. For each hurricane, the center, shape, geographical orientation, track and wind speeds were defined. The wind field for each hurricane is integrated with the asset vulnerability and the asset locations to compute the damage. The annual frequency and the portfolio damage for each simulated hurricane is determined. By querying this database of thousands of hurricane losses, various loss exceedance or non-exceedance distributions are generated. The frequencies and computed damage for all hurricanes are combined to calculate the expected annual loss and the annual aggregate exceedance relations.

Aggregate damage exceedance calculations are developed by keeping a running total of damage from ***all possible events*** in a given time period. At the end of each time period, the aggregate damage for all events is then determined by probabilistically summing the damage distribution from each event, taking into account the event frequency. The process considers the probability of having zero events, one event, two events, etc. during the time period. Each event within the EQECAT stochastic event set is unique, described by a frequency of occurrence, severity, azimuth of landfall, central track, radius to maximum winds, hurricane profile and other critical parameters.

A series of probabilistic analyses were performed, using the vulnerability curves derived for Gulf assets and the computer program USWIND™. A summary of the analysis is presented in Table 5-1, which shows the aggregate damage (i.e. deductible is "0") exceedance probability for damage layers between zero and over $250 million dollars.

For each damage layer shown, the probability of damage exceeding a specified value is shown. For example, the probability of damage exceeding $100 million in one year is 1.9%. The analysis calculates the probability of damage from all hurricanes and aggregates the total.

Table 4-1 provides the aggregate damage exceedance probabilities for the Gulf T & D assets analyzed for a series of layers. Each layer has a layer amount of $10 million, except for the final layer which represents all damage $250 million and greater. The value in the first column, labeled Damage Layer, is the attachment point for each layer, with the exception of the last layer, for which the attachment point is $250 million.

The second column of the table, labeled 1 year Exceedance Probability, provides the 1-year modeled probability of penetrating each layer, i.e. the probability that the total damage from all events in a 1 year period will exceed the attachment point of the layer.

The expected annual damage (EAD) and exposure to Gulf's Reserve from hurricanes is $8.3 million. This value represents the average damage from all simulated hurricanes over a long time horizon within the EQECAT stochastic event set. The EAD is not expected to occur each and every year. Some years will have no damage from hurricanes, some years will have small amounts of damage and a few years will have large amounts of damage.

Table 4-1

GULF POWER COMPANY T & D ASSETS
AGGREGATE DAMAGE EXCEEDANCE PROBABILITIES

Damage Layer ($millions)	1 Year Exceedance Probability
0 (>0.5)	24.5%
10	15.4%
20	10.8%
30	8.03%
40	6.23%
50	4.96%
60	4.02%
70	3.30%
80	2.74%
90	2.29%
100	1.93%
110	1.63%
120	1.39%
130	1.18%
140	1.01%
150	0.87%
160	0.75%
170	0.65%
180	0.57%
190	0.49%
200	0.43%
210	0.38%
220	0.34%
230	0.30%
240	0.26%
>250	0.23%

5. Reserve Performance Analysis

A probabilistic analysis of losses from hurricanes was performed for Gulf Power (Gulf) to determine their potential impact on the Reserve fund.

Analysis

The Reserve performance analysis consisted of performing 10,000 iterations of hurricane loss simulations within the Gulf service territory, each covering an 8-year period, to determine the effect of the charges for damage on the Gulf Reserve. Monte Carlo simulations were used to generate damage samples for the analysis. The analysis provides an estimate of the Reserve assets in each year of the simulation, accounting for the annual accrual, expenses, fund earnings when balances are positive, borrowing costs when fund balances are negative and hurricane damage using a dynamic financial model.

Assumptions

The analysis performed included the following assumptions:

- An initial Reserve balance of $27 million.
- Annual Reserve accruals of $3.5 million were assumed in the analysis.
- Hurricane losses are assumed to increase by 4% per year as replacement values of T&D increase due to inflation and system growth.
- Negative Reserve balances are assumed to be financed with an unlimited line of credit costing 3.8%.
- Positive Reserve balances are assumed to earn at an annual rate of 3. 6%.
- $6.8 million of the $8.3 million Expected Annual Loss, determined in the Loss Analysis, is assumed to be an obligation of the reserve annually.
- All results are shown in constant 2009 Reserve dollars.

The analysis results for the case analyzed are shown in Table 5-1 below. The results show the Annual Reserve Accrual amount, the mean (expected) Reserve fund balance as well as the probability that the Reserve fund balance will be negative in any one or more of the five years of the simulated time horizon.

Table 5-1
GULF POWER COMPANY T & D
RESERVE FUND ACCRUALS AND
PROBABILITY OF RESERVE FUND PERFORMANCE

Initial Reserve Balance	Annual Reserve Accrual	Expected Reserve Balance at end of 5 years	Probability of negative balance within 5 years
($ millions)	($ millions)	($ millions)	%
$27	$3.5	$11	29%

Figure 5-1 below shows the results of the Reserve fund performance analysis. These results show the mean (expected) Reserve fund balance as well as the 5th and 95th percentiles.

For example, given an initial Reserve balance of $27 million and an Annual Accrual of $3.5 million, Figure 5-1 illustrates the expected performance of the Reserve. The Reserve has a mean (expected) balance of $11 at the end of the five year period. The 5th percentile and 95th percentile 5 year ending Reserve balances are $51 million and negative $(111) million respectively. The Reserve fund has a 29% chance of having a negative balance in one or more years of the five year simulation.

The first year of each simulation begins with a $27 million Reserve balance. The first year's annual accrual will bring the reserve balance to $30.5 million. Table 5-1, shows that the likelihood of hurricane damage exceeding $30 million in a single year is about 8%.

The accrual of $3.5 million is less than the Reserve obligation of the Expected Annual Damage from hurricanes of $6.8 million. Therefore with each passing year, the Reserve ending balance has a decreasing likelihood of accumulating surpluses. The expected (mean) Reserve balance declines gradually over the five year simulation to $11 million at five years reflecting the annual accrual less than the expected annual damage. At the end of five years, the likelihood of annual hurricane damage in excess of $11 million is approximately 15%, about double the likelihood at the beginning of the simulation.

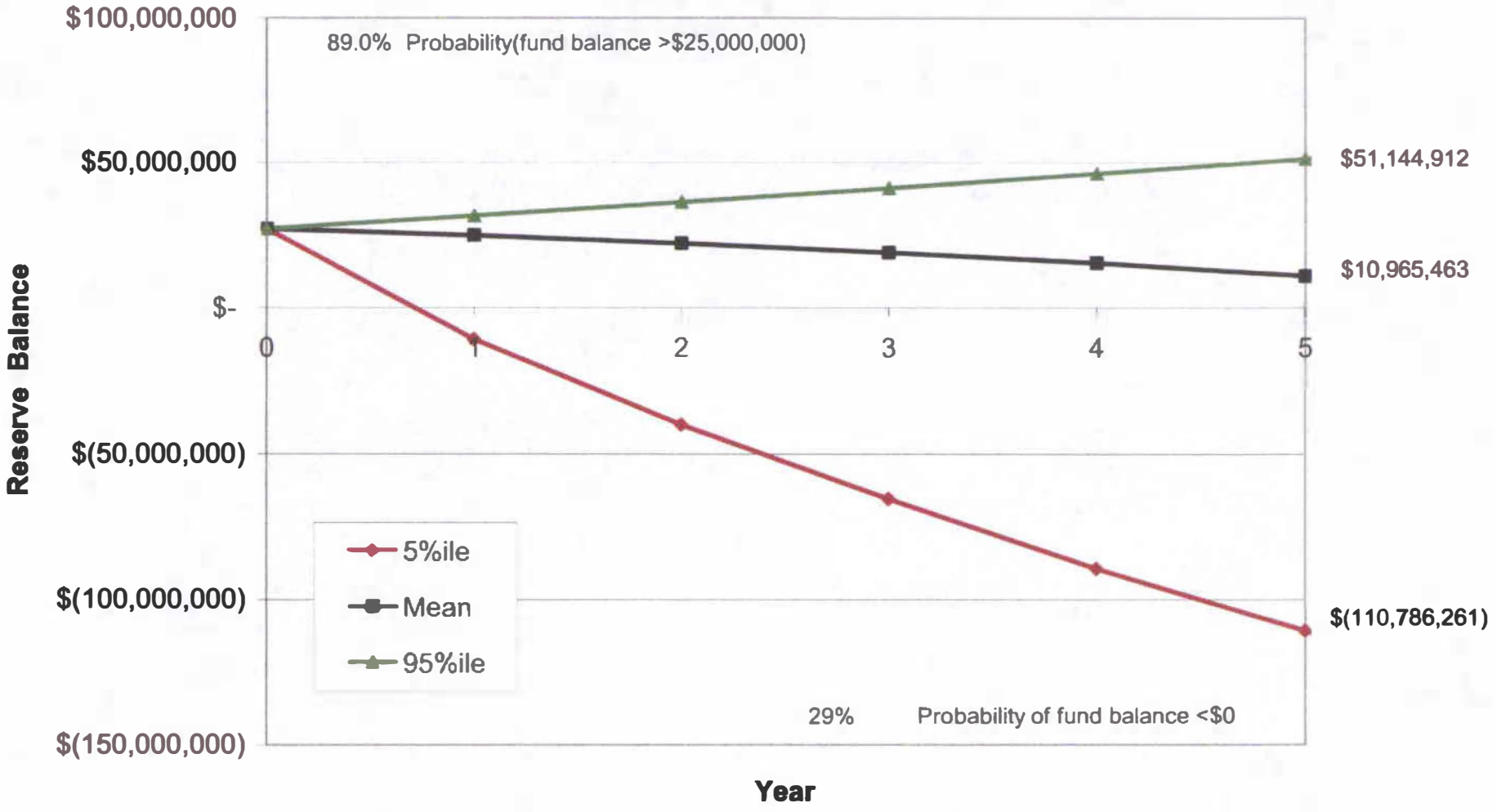


Figure 5-1: Reserve Performance Analysis Results: $27 million Initial Balance, $3.5 million Annual Accrual

6. References

1. "Florida Commission on Hurricane Loss Projection Methodology", EQECAT, an ABS Group Company, May 18, 2009.

EQECAT
An ABS Group Company

FOR MORE INFORMATION, CONTACT EQECAT.:

AMERICAS HEADQUARTERS
PHONE 510-817.3100

NEW JERSEY
PHONE 201-287-8320

IRVINE
PHONE 714-734-4242

UNITED KINGDOM
PHONE 44 207 265 2030

FRANCE
PHONE 33 1 44 79 01 01

JAPAN
PHONE 81-3-5322-1370